**Module E: Learning Curves**

**Test Bank**

**Multiple Choice**

1. \_\_\_\_\_\_ shows that as the rate of production for an item doubles, the processing time per unit of that item decreases by a constant percentage.

a. Learning rate

b. Learning coefficient

c. Learning curve

d. Learning time

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: What Are Learning Curves?

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

2. Typically, when an activity is performed repeatedly, the time required to perform it steadily decreases. Which of the following captures this phenomenon?

a. practice curve

b. knowledge curve

c. learning curve

d. learning time

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: What Are Learning Curves?

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

3. Learning curves are most useful for measuring performance improvements for \_\_\_\_\_\_.

a. routine jobs

b. simple jobs

c. one-time jobs

d. complex jobs

Ans: D

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: What Are Learning Curves?

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

4. Learning curves are of little use for \_\_\_\_\_\_.

a. nonroutine jobs

b. repetitive jobs of short duration

c. complex jobs

d. jobs that require long time to complete

Ans: B

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: What Are Learning Curves?

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

5. After a certain point, no further learning occurs, and each subsequent repetition or unit produced take the same amount of time, and the system has reached a steady state. This is illustrated by the \_\_\_\_\_\_ of the learning curve.

a. steep increase

b. steep decrease

c. flattening

d. smoothing

Ans: C

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Figure E.1: Learning Curve Relationship

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

6. Which of the following statements is true about learning curves?

a. The curve will touch the horizontal axis at some point.

b. The time reduction per repetition will steadily increase as the number of repetitions or units produced increases.

c. The time per repetition or unit produced will never be zero.

d. Learning and performance improvement will occur indefinitely.

Ans: C

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Figure E.1: Learning Curve Relationship

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

7. An 80% learning curve means a(n) \_\_\_\_\_\_.

a. 20% decrease in unit time as the number of repetitions or units produced doubles

b. 80% decrease in unit time as the number of repetitions or units produced doubles

c. 20% increase in unit time as the number of repetitions or units produced doubles

d. 80% increase in unit time as the number of repetitions or units produced doubles

Ans: A

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Figure : End of Learning or Improvement

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

8. Under the learning curve, as the number of repetitions or units of an item produced doubles, the processing time per unit of that item decreases by a constant percentage. This constant percentage is typically in the \_\_\_\_\_\_ range.

a. 30% to 50%

b. 10% to 20%

c. 40% to 50%

d. 1% to 10%

Ans: B

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Figure : End of Learning or Improvement

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

9. In general, it is more challenging to apply learning curves in the \_\_\_\_\_\_ as compared to the \_\_\_\_\_\_.

a. manufacturing industry, service industry

b. electronics industry, service industry

c. service industry, manufacturing industry

d. manufacturing industry, hospitals

Ans: C

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Applications of Learning Curves

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

10. There are \_\_\_\_\_\_ approaches to solving learning curve problems.

a. three

b. four

c. five

d. six

Ans: A

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

11. Which of the following is NOT one of the approaches to solve learning curve problems?

a. arithmetic approach

b. using a table of learning curve coefficient values

c. logarithmic formula approach

d. quadratic formula approach

Ans: D

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

12. Learning curves can be used to determine the number of workers needed to meet planned production level targets. This statement is an application of learning curves in which of the following functions?

a. workforce planning and scheduling

b. cost estimation and budgeting

c. new product pricing

d. procurement negotiations in supply chains

Ans: A

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Applications of Learning Curves

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

13. Learning curves will help managers develop more accurate estimates of labor and material costs that are incurred during the production cycles. This statement is an application of learning curves in which of the following functions?

a. workforce planning and scheduling

b. cost estimation and budgeting

c. new product pricing

d. procurement negotiations in supply chains

Ans: B

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Applications of Learning Curves

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

14. Understanding learning curves will enable procurement specialists to determine the number of units of the specialized item that they plan to order and then negotiate with the supplier based on the order size. This statement is an application of learning curves in which of the following functions?

a. workforce planning and scheduling

b. cost estimation and budgeting

c. new product pricing

d. procurement negotiations in supply chains

Ans: D

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Applications of Learning Curves

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

15. Learning curve effects enable managers to pursue aggressive pricing strategies to penetrate new markets and still be profitable in the long run. This statement is an application of learning curves in which of the following functions?

a. workforce planning and scheduling

b. cost estimation and budgeting

c. new product pricing

d. procurement negotiations in supply chains

Ans: C

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Applications of Learning Curves

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

16. \_\_\_\_\_\_ is the simplest approach to solving learning curve problems.

a. The arithmetic approach

b. Using a table of learning curve coefficient values

c. The logarithmic formula approach

d. The quadratic formula approach

Ans: A

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

17. The arithmetic approach is based on the assumption that as production doubles, the per-unit production time declines by a constant percentage, often referred to as \_\_\_\_\_\_.

a. learning time

b. learning rate

c. learning coefficient

d. learning factor

Ans: B

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

18. Assume that it takes 100 hours to produce the first unit of a product, and the learning rate for this production process is 80%. Using the arithmetic approach, determine the labor hours required to produce the 4thunit.

a. 100 hours

b. 80 hours

c. 64 hours

d. 52 hours

Ans: C

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

19. Assume that it takes 100 hours to produce the first unit of a product, and the learning rate for this production process is 80%. Using the arithmetic approach, determine the labor hours required to produce the 16thunit.

a. 100 hours

b. 80 hours

c. 51.2 hours

d. 40.96 hours

Ans: D

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

20. \_\_\_\_\_\_ is suitable only for estimating the number of hours required to produce the *n*th unit, where *n* is the doubled value. It cannot be used to find the time required to find intermediate units.

a. The arithmetic approach

b. Using a table of learning curve coefficient values

c. The logarithmic formula approach

d. The quadratic formula approach

Ans: A

Cognitive Domain: Application (Apply)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

21. \_\_\_\_\_\_ approach uses the formula to determine the number of direct hours required to produce the *n*th units.

a. The arithmetic approach

b. Using a table of learning curve coefficient values

c. The logarithmic formula approach

d. The quadratic formula approach

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-1. Define the concept of learning curves.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

22. ABC Hospital completed its first transplant, and the procedure took 50 hours. The hospital has five more transplants scheduled. Based on other similar procedures carried out, the hospital estimates that it has an 85% learning rate. Estimate the time it will take to complete the third transplant.

a. 34.5 hours

b. 36 hours

c. 38.67 hours

d. 40 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

23. ABC Hospital completed its first transplant, and the procedure took 50 hours. The hospital has five more transplants scheduled. Based on other similar procedures carried out, the hospital estimates that it has an 85% learning rate. Estimate the total time required for all five transplants.

a. 160 hours

b. 220 hours

c. 201.64 hours

d. 214.34 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

24. Which of the following metrics is used to calculate the time required for a particular repetition of a task or to produce a particular unit of an item?

a. unit time coefficient value

b. flow time coefficient value

c. production time coefficient value

d. total time coefficient value

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

25. Which of the following metrics is used to calculate the cumulative or total time required to complete a given number of repetitions of a task or produce a given number of unit of an item?

a. unit time coefficient value

b. flow time coefficient value

c. production time coefficient value

d. total time coefficient value

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

26. Purple Airlines has ordered 30 small jets from its supplier. The supplier has estimated the first aircraft will require 350 days of direct labor to manufacture and assemble. Based on past experience, the supplier estimates the learning curve to be 75%. Estimate the number of days of direct labor for the 15th jet aircraft.

a. 113.75 days

b. 115.32 days

c. 120.43 days

d. 116.87 days

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

27. Purple Airlines has ordered 30 small jets from its supplier. The supplier has estimated the first aircraft will require 350 days of direct labor to manufacture and assemble. Based on past experience, the supplier estimates the learning curve to be 75%. Estimate the number of days of direct labor for all 30 jet aircrafts.

a. 3,000.5 days

b. 4,006.1 days

c. 3,456.7 days

d. 4,567.3 days

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

28. Purple Airlines has ordered 30 small jets from its supplier. The supplier has estimated the first aircraft will require 350 days of direct labor to manufacture and assemble. Based on past experience, the supplier estimates the learning curve to be 75%. Estimate the average number of days of direct labor for all 30 jet aircrafts.

a. 231.43 days

b. 121.43 days

c. 133.54 days

d. 156.43 days

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

29. Which of the following is FALSE about learning curves?

a. Different production features will affect the degree of learning that takes place.

b. Selecting production processes that offer the fastest opportunities for learning will allow firms to apply learning curves most effectively.

c. Learning curves should be applied to production lines that are stabilized and fully functional.

d. Different systems throughout the factory will yield the same opportunities for learning and will have the same shape of learning curves.

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Approaches to Solving Learning Curve Problems

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

30. Consider a programmer who is required to complete four work assignments. Each assignment takes 50 hours to complete. Assume an overhead rate of $1.50 and the cost per hour for the programmer’s services to be $35/hour. The direct billing charge will be \_\_\_\_\_\_.

a. $10,000

b. $12,000

c. $10,500

d. $11,500

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Learning Curves in Cost Estimation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

31. Consider a programmer required to complete four work assignments. Assume an overhead rate of $1.50 and the cost per hour for the programmer’s services to be $35/hour. The programmer’s learning rate for coding is 0.85. The steady state for the fourth iteration (*n* = 4) to code is 50 hours. Determine the estimate of time needed for the first coding iteration.

a. 69.16 hours

b. 97.43 hours

c. 87.34 hours

d. 78.43 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Learning Curves in Cost Estimation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

32. A construction firm wants to estimate the direct labor of a worker who will perform multiple iterations of tasks. The worker must do a total of 20 of these activities to reach steady state. The time estimated to perform the 20th iteration is 2 hours, and the learning rate for this repetitive activity is 70%. The cost of labor is $40/hr. Estimate the time necessary to complete the first activity.

a. 9.34 hours

b. 8.43 hours

c. 5.34 hours

d. 10.31 hours

Ans: A

Cognitive Domain: Application (Apply)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Learning Curves in Cost Estimation

Difficulty Level: Medium

AACSB: Application of knowledge (able to translate knowledge of business and management into practice)

33. A construction firm wants to estimate the direct labor of a worker who will perform multiple iterations of tasks. The worker must do a total of 20 of these activities to reach steady state. The time estimated to perform the 20th iteration is 2 hours, and the learning rate for this repetitive activity is 70%. The cost of labor is $40/hr. Estimate the direct labor cost for 20 iterations of these activities.

a. $2,767.25

b. $2,341.45

c. $3,456.65

d. $1,234.12

Ans: A

Cognitive Domain: Comprehension (Understand)

Learning Objective: E-5. Discuss the advantages and limitations of learning curves.

Answer Location: Learning Curves in Cost Estimation

Difficulty Level: Easy

AACSB: Economic, political, regulatory, legal, technological, and social contexts of organizations in a global society

34. Which of the following statements about learning curves is FALSE?

a. Learning rates differ from company to company and from industry to industry.

b. Learning curves are mostly applicable to direct materials and labor.

c. Learning curves provide the actual times of activities/tasks.

d. Learning curves have limited use in mass production situations, as the improvements through learning are negligible.

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-5. Discuss the advantages and limitations of learning curves.

Answer Location: Limitations of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

35. Which of the following statements is FALSE about limitations of learning curves?

a. If a worker is bored by conducting repetitive tasks, very little learning occurs.

b. Changes to workers or job designs may alter the trajectory of the curve, causing a temporary downward spike in the curve.

c. If worker interests drop toward the end of the project, the learning curve will prematurely level off.

d. Time estimates for subsequent repetitions of an activity or unit production are based on the time it takes to perform the first iteration of the activity or the first unit produced.

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-5. Discuss the advantages and limitations of learning curves.

Answer Location: Limitations of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

36. Uses of learning curves were known as early as \_\_\_\_\_\_.

a. 1685

b. 1785

c. 1885

d. 1985

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: E-5. Discuss the advantages and limitations of learning curves.

Answer Location: Applications of Learning Curves

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

37. Learning curves were first applied to the aircraft industry in \_\_\_\_\_\_.

a. 1916

b. 1926

c. 1936

d. 1946

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: E-5. Discuss the advantages and limitations of learning curves.

Answer Location: Applications of Learning Curves

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

38. Compared to other industries, learning curves can be more challenging to apply in \_\_\_\_\_\_.

a. electronics manufacturing

b. automotive manufacturing

c. chemical manufacturing

d. hospitals

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

39. The first unit produced in a process takes 400 hours. As the number of units produced doubles, production time decreases by 20%. Using the arithmetic approach, calculate the production time for the 64th unit.

a. 320 hours

b. 256 hours

c. 105 hours

d. 164 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

40. The first unit produced in a process takes 400 hours. As the number of units produced doubles, production time decreases by 20%. Using the arithmetic approach, calculate the production time for the 128th unit.

a. 84 hours

b. 256 hours

c. 105 hours

d. 72 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

41. The first unit produced in a process takes 600 hours. As the number of units produced doubles, production time decreases by 32%. Using the arithmetic approach, calculate the production time for the 128th unit.

a. 84 hours

b. 40 hours

c. 105 hours

d. 47 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

42. The first unit produced in a process takes 400 hours. As the number of units produced doubles, production time decreases by 32%. Using the arithmetic approach, calculate the production time for the 16th unit.

a. 84 hours

b. 83 hours

c. 96 hours

d. 86 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

43. The first unit produced in a process takes 600 hours. As the number of units produced doubles, production time decreases by 32%. Using the arithmetic approach, calculate the production time for the 16th unit.

a. 132 hours

b. 148 hours

c. 128 hours

d. 156 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

44. The first unit produced in a process takes 480 hours. As the number of units produced doubles, production time decreases by 18%. Using the arithmetic approach, calculate the production time for the 16th unit.

a. 217 hours

b. 328 hours

c. 128 hours

d. 156 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

45. The first unit produced in a process takes 480 hours. As the number of units produced doubles, production time decreases by 18%. Using the arithmetic approach, calculate the production time for the 32nd unit.

a. 217 hours

b. 328 hours

c. 178 hours

d. 156 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

46. The first unit produced in a process takes 480 hours. As the number of units produced doubles, production time decreases by 18%. Using the arithmetic approach, calculate the production time for the 64th unit.

a. 217 hours

b. 146 hours

c. 178 hours

d. 156 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

47. The first unit produced in a process takes 480 hours. As the number of units produced doubles, production time decreases by 18%. Using the arithmetic approach, calculate the production time for the eighth unit.

a. 217 hours

b. 146 hours

c. 178 hours

d. 265 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

48. The first unit produced in a process takes 480 hours. As the number of units produced doubles, production time decreases by 18%. Using the arithmetic approach, calculate the production time for the fourth unit.

a. 217 hours

b. 323 hours

c. 178 hours

d. 256 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

49. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 30 hours for the first widget. Acme estimates it has a 95% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the eighth widget.

a. 25.71 hours

b. 22.68 hours

c. 19.62 hours

d. 18.76 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

50. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 28 hours for the first widget. Acme estimates it has a 95% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the fourth widget.

a. 24.71 hours

b. 22.68 hours

c. 25.28 hours

d. 18.76 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

51. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 45 hours for the first widget. Acme estimates it has a 92% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 22nd widget.

a. 31.05 hours

b. 28.22 hours

c. 18.96 hours

d. 42.87 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

52. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 50 hours for the first widget. Acme estimates it has a 97% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 56th widget.

a. 31.05 hours

b. 41.90 hours

c. 18.96 hours

d. 42.87 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

53. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 30 hours for the first widget. Acme estimates it has a 92% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 26th widget.

a. 11.05 hours

b. 21.90 hours

c. 28.96 hours

d. 20.28 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

54. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 25 hours for the first widget. Acme estimates it has a 98% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 100th widget.

a. 28.96 hours

b. 20.28 hours

c. 21.88 hours

d. 31.61 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

55. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 50 hours for the first widget. Acme estimates it has an 85% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 50th widget.

a. 20.00 hours

b. 18.25 hours

c. 17.66 hours

d. 22.45 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

56. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 100 hours for the first widget. Acme estimates it has a 95% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 75th widget.

a. 62.89 hours

b. 72.70 hours

c. 56.55 hours

d. 76.42 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

57. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 50 hours for the first widget. Acme estimates it has a 90% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 60th widget.

a. 26.85 hours

b. 32.70 hours

c. 22.55 hours

d. 21.42 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

58. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 60 hours for the first widget. Acme estimates it has a 60% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 60th widget.

a. 1.85 hours

b. 3.70 hours

c. 4.55 hours

d. 2.94 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

59. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 60 hours for the first widget. Acme estimates it has a 90% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 35th widget.

a. 34.98 hours

b. 29.30 hours

c. 44.55 hours

d. 22.94 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

60. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 62 hours for the first widget. Acme estimates it has a 98% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 56th widget.

a. 55.18 hours

b. 59.30 hours

c. 64.55 hours

d. 49.94 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

61. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 53 hours for the first widget. Acme estimates it has an 86% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 102th widget.

a. 19.35 hours

b. 29.30 hours

c. 22.55 hours

d. 18.94 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

62. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 64 hours for the first widget. Acme estimates it has an 87% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 62th widget.

a. 19.35 hours

b. 27.90 hours

c. 22.55 hours

d. 18.94 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

63. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 79 hours for the first widget. Acme estimates it has a 94% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 128th widget.

a. 59.35 hours

b. 57.90 hours

c. 51.27 hours

d. 49.94 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

64. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 54 hours for the first widget. Acme estimates it has a 91% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 141th widget.

a. 29.35 hours

b. 27.54 hours

c. 31.27 hours

d. 29.94 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

65. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 56 hours for the first widget. Acme estimates it has an 89% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 112th widget.

a. 29.35 hours

b. 25.37 hours

c. 31.27 hours

d. 29.94 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

66. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 57 hours for the first widget. Acme estimates it has an 84% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 114th widget.

a. 17.27 hours

b. 19.58 hours

c. 16.52 hours

d. 21.94 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

67. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 79 hours for the first widget. Acme estimates it has an 81% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 135th widget.

a. 17.78 hours

b. 19.58 hours

c. 16.52 hours

d. 21.94 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

68. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 52 hours for the first widget. Acme estimates it has an 82% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 87th widget.

a. 17.78 hours

b. 14.51 hours

c. 16.52 hours

d. 15.94 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

69. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 52 hours for the first widget. Acme estimates it has a 95% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 132th widget.

a. 36.24 hours

b. 34.51 hours

c. 29.52 hours

d. 35.94 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

70. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 51 hours for the first widget. Acme estimates it has an 85% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 148th widget.

a. 16.24 hours

b. 15.86 hours

c. 19.52 hours

d. 16.94 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

71. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 78 hours for the first widget. Acme estimates it has a 92% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 66th widget.

a. 46.24 hours

b. 45.86 hours

c. 49.52 hours

d. 47.19 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

72. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 68 hours for the first widget. Acme estimates it has a 91% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 109th widget.

a. 36.24 hours

b. 34.86 hours

c. 39.52 hours

d. 35.90 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

73. Acme, Inc., produces widgets. To manufacture a new type of widget, it took 73 hours for the first widget. Acme estimates it has an 88% learning rate. Using the logarithmic approach, calculate the time it will take to manufacture the 109th widget.

a. 31.24 hours

b. 34.86 hours

c. 30.81 hours

d. 32.90 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

74. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 15 iterations before the process reached a steady state of 35 hours. If Weston has an 82% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 76.00 hours

b. 72.45 hours

c. 75.45 hours

d. 73.52 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

75. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 15 iterations before the process reached a steady state of 35 hours. If Weston has an 81% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 79.73 hours

b. 72.45 hours

c. 75.45 hours

d. 73.52 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

76. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 21 iterations before the process reached a steady state of 47 hours. If Weston has an 87% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 86.65 hours

b. 87.64 hours

c. 85.60 hours

d. 85.24 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

77. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 20 iterations before the process reached a steady state of 30 hours. If Weston has a 99% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 32.76 hours

b. 31.33 hours

c. 31.05 hours

d. 28.72 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

78. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 18 iterations before the process reached a steady state of 7 hours. If Weston has a 94% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 9.06 hours

b. 10.92 hours

c. 8.90 hours

d. 7.51 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

79. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 15 iterations before the process reached a steady state of 27 hours. If Weston has a 94% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 36.10 hours

b. 32.53 hours

c. 33.51 hours

d. 34.38 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

80. Weston, Inc., produces widgets. To manufacture a new type of widget, it took nine iterations before the process reached a steady state of 38 hours. If Weston has an 80% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 77.74 hours

b. 75.68 hours

c. 77.09 hours

d. 76.83 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

81. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 25 iterations before the process reached a steady state of 19 hours. If Weston has a 94% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 25.32 hours

b. 26.88 hours

c. 24.35 hours

d. 24.16 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

82. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 12 iterations before the process reached a steady state of 30 hours. If Weston has an 84% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 56.05 hours

b. 57.09 hours

c. 54.59 hours

d. 55.07 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

83. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 23 iterations before the process reached a steady state of 13 hours. If Weston has a 97% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 15.40 hours

b. 13.28 hours

c. 12.23 hours

d. 14.92 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

84. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 12 iterations before the process reached a steady state of 8 hours. If Weston has a 77% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 20.42 hours

b. 21.62 hours

c. 19.36 hours

d. 18.10 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

85. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 18 iterations before the process reached a steady state of 3 hours. If Weston has an 86% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 7.30 hours

b. 4.44 hours

c. 5.63 hours

d. 5.11 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

86. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 13 iterations before the process reached a steady state of 39 hours. If Weston has a 99% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 41.72 hours

b. 40.48 hours

c. 40.10 hours

d. 38.65 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

87. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 19 iterations before the process reached a steady state of 33 hours. If Weston has a 94% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 42.92 hours

b. 44.80 hours

c. 41.21 hours

d. 42.11 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

88. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 22 iterations before the process reached a steady state of 10 hours. If Weston has a 96% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 12.00 hours

b. 13.80 hours

c. 11.71 hours

d. 9.81 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

89. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 19 iterations before the process reached a steady state of 48 hours. If Weston has a 76% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 153.32 hours

b. 154.33 hours

c. 154.01 hours

d. 153.25 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

90. Weston, Inc., produces widgets. To manufacture a new type of widget, it took nine iterations before the process reached a steady state of 32 hours. If Weston has a 78% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 71.79 hours

b. 70.34 hours

c. 68.30 hours

d. 68.50 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

91. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 21 iterations before the process reached a steady state of 39 hours. If Weston has an 87% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 71.90 hours

b. 73.10 hours

c. 71.75 hours

d. 71.84 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

92. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 15 iterations before the process reached a steady state of 13 hours. If Weston has an 81% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 29.61 hours

b. 30.14 hours

c. 29.47 hours

d. 28.44 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

93. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 11 iterations before the process reached a steady state of 18 hours. If Weston has a 95% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 21.49 hours

b. 22.26 hours

c. 19.58 hours

d. 20.80 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

94. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 18 iterations before the process reached a steady state of 12 hours. If Weston has an 84% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 24.83 hours

b. 26.68 hours

c. 23.38 hours

d. 23.61 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

95. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 24 iterations before the process reached a steady state of 14 hours. If Weston has a 95% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 17.96 hours

b. 17.04 hours

c. 16.11 hours

d. 17.71 hours

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

96. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 25 iterations before the process reached a steady state of 32 hours. If Weston has an 83% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 76.02 hours

b. 76.72 hours

c. 76.07 hours

d. 73.53 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

97. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 12 iterations before the process reached a steady state of 42 hours. If Weston has a 79% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 95.89 hours

b. 98.50 hours

c. 97.78 hours

d. 95.66 hours

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

98. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 15 iterations before the process reached a steady state of 9 hours. If Weston has a 90% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 13.58 hours

b. 15.45 hours

c. 13.38 hours

d. 11.51 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

99. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 18 iterations before the process reached a steady state of 6 hours. If Weston has a 78% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 16.91 hours

b. 18.20 hours

c. 15.87 hours

d. 15.35 hours

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

100. Weston, Inc., produces widgets. To manufacture a new type of widget, it took 23 iterations before the process reached a steady state of 36 hours. If Weston has a 98% learning rate, use the logarithmic approach to calculate the time it took to manufacture the first widget.

a. 40.38 hours

b. 39.44 hours

c. 38.02 hours

d. 37.08 hours

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: E-3. Apply various approaches to solving learning curve problems.

Answer Location: Applications of Learning Curves

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)